

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Original) A sorting machine for diverting an article from an article stream, the sorting machine comprising:

a manifold having a first blow-off conduit and a second blow-off conduit formed therein, said first blow-off conduit terminating at a first blow-off port and said second blow-off conduit terminating at a second blow-off port;

a first valve supported on said manifold, said first valve being in fluid communication with said first blow-off conduit of said manifold for supplying a burst of fluid out of said manifold through said first blow-off port to divert an article from an article stream intersecting with said first blow-off port, said first valve further having a by-pass duct in fluid communication with said second blow-off conduit of said manifold; and

a second valve supported on top of said first valve, said second valve being in fluid communication with said by-pass duct of said first valve for supplying a burst of fluid out of said manifold through said second blow-off port to divert an article from an article stream intersecting with said second blow-off port.

2. (Original) A sorting machine as defined in Claim 1, wherein said first and second valves are pneumatic valves and said fluid is air.

3. (Original) A sorting machine as defined in Claim 1, wherein the space between said first and second blow-off ports of said manifold is less than the width of said first valve.

4. (Original) A sorting machine as defined in Claim 1, wherein said manifold further includes a fluid supply line formed therein for supplying a fluid to said first and second valves.

5. (Original) A sorting machine as defined in Claim 4, wherein said first valve includes a fluid supply duct in fluid communication with said fluid supply line formed in said manifold, said fluid supply duct supplying fluid to said first and second valves.
6. (Original) A sorting machine as defined in Claim 1, wherein said first and second valves include actuators electrically connected to a vision system, said actuators receiving a signal from said vision system for selectively activating said valves to respectively supply said bursts of fluid out of said manifold through said first and second blow-off ports.
7. (Original) A sorting machine as defined in Claim 1, wherein said first and second blow-off conduits of said manifold each include a valve connection interface opposite said first and second blow-off ports for fluidly connecting said first valve to said first and second blow-off conduits, said valve connection interfaces being provided with seals to prevent fluid leakage.
8. (Original) A sorting machine as defined in Claim 1, wherein said by-pass duct of said first valve is disposed within said first valve and extends from a bottom surface of said first valve to a top surface of said first valve, said second valve being supported on said top surface of said first valve.
9. (Original) A sorting machine as defined in Claim 1, wherein said first valve further includes a blow-off duct in fluid communication with said first blow-off conduit of said manifold and said second valve further includes a blow-off duct in fluid communication with said by-pass duct of said first valve, said blow-off ducts of said first and second valves being sized and shaped to accommodate for the height difference between said first and second valves.
10. (Original) A sorting machine as defined in Claim 1, wherein said first and second blow-off ports are disposed on a first face of said manifold and said first valve is supported on a second face of said manifold.

11. (Original) A sorting machine as defined in Claim 10, wherein said manifold further includes a third blow-off conduit formed therein, said third blow-off conduit terminating at a third blow-off port disposed on said first face of said manifold, and wherein said sorting machine further includes a third valve in fluid communication with said third blow-off conduit of said manifold for supplying a burst of air out of said manifold through said third blow-off port to divert an article from an article stream intersecting with said third blow-off port.

12. (Original) A sorting machine as defined in Claim 11, wherein said first valve includes a second by-pass duct in fluid communication with said third blow-off conduit of said manifold, and wherein said second valve includes a by-pass duct in fluid communication with said second by-pass duct of said first valve, said third valve being supported on top of said second valve and being in fluid communication with said by-pass duct of said second valve for supplying a burst of fluid out of said manifold through said third blow-off port.

13. (Original) A sorting machine as defined in Claim 11, wherein said third valve is supported on a third face of said manifold.

14. (Original) A sorting machine as defined in Claim 13, wherein said manifold further includes a fourth blow-off conduit formed therein, said fourth blow-off conduit terminating at a fourth blow-off port disposed on said first face of said manifold, and wherein said third valve includes a by-pass duct in fluid communication with said fourth blow-off conduit of said manifold, and wherein said sorting machine further includes a fourth valve supported on top of said third valve, said fourth valve being in fluid communication with said by-pass duct of said third valve for supplying a burst of fluid out of said manifold through said fourth blow-off port to divert an article from an article stream intersecting with said fourth blow-off port.

15. (Original) A sorting machine as defined in Claim 14, wherein said first, second, third and fourth blow-off ports of said manifold are sequentially aligned, the space between the first and the fourth blow-off ports being less than the width of said first valve plus the width of said third valve.

16. (Original) A sorting machine for diverting an article from an article stream, the sorting machine comprising:

a manifold having a first blow-off port and a second blow-off port formed therein and a top surface and a bottom surface;

a first valve supported on said top surface of said manifold, said first valve being in fluid communication with said first blow-off port of said manifold for supplying a burst of fluid out of said first blow-off port to divert an article from an article stream intersecting with said first blow-off port;

a second valve supported on one of a top of said first valve and said bottom surface of said manifold, said second valve being in fluid communication with said second blow-off port of said manifold for supplying a burst of fluid out of said second blow-off port to divert an article from an article stream intersecting with said second blow-off port.

17. (Original) A sorting machine as defined in Claim 16, wherein said second valve is supported on said top of said first valve and said sorting machine further comprises a bypass duct for providing fluid communication between said second valve and said second blow-off port of said manifold.

18. (Original) A sorting machine as defined in Claim 16, wherein the space between said first and second blow-off ports of said manifold is less than the width of said first valve.

19. (Original) A sorting machine as defined in Claim 16, wherein said manifold further includes a fluid supply line formed therein for supplying a fluid to said first and second valves.

20. (Original) A method for decreasing the space between a first article stream intersecting a first blow-off port of a sorting machine and a second article stream intersecting a second blow-off port of said sorting machine, the method comprising the steps of:

supporting a first valve on a top surface of a manifold having said first and second blow-off ports formed therein, said first valve being in fluid communication with said first blow-off port for supplying a burst of fluid out of said first blow-off port to divert an article from said first article stream;

supporting a second valve on one of a top of said first valve and a bottom surface of said manifold, said second valve being in fluid communication with said second blow-off port for supplying a burst of fluid out of said second blow-off port to divert an article from said second article stream,

wherein said space between said first and second article streams is less than the width of said first valve.

21. (Original) A method as defined in Claim 20, wherein said second valve is supported on top of said first valve and the method further comprises the step of supporting a third valve on top of said second valve, said third valve being in fluid communication with a third blow-off port formed in said manifold for supplying a burst of fluid out of said third blow-off port to divert an article from a third article stream intersecting said third blow-off port, wherein the space between said first, second and third article streams is less than the width of said first valve.

22. (New) A stacked valve system for providing independent bursts of fluid comprising:
a manifold having a first conduit and a second conduit formed therein, said first conduit terminating at a first port and said second conduit terminating at a second port;

a first valve supported on said manifold, said first valve being in fluid communication with said first conduit of said manifold for supplying a first burst of fluid out of said manifold through said first port, said first valve further having a by-pass duct in fluid communication with said second conduit of said manifold; and

a second valve supported on top of said first valve, said second valve being in fluid communication with said by-pass duct of said first valve for supplying a second burst of fluid out of said manifold through said second port.

23. (New) A stacked valve system as defined in Claim 22, wherein the space between said first and second ports of said manifold is less than the width of said first valve.

24. (New) A stacked valve system as defined in Claim 22, wherein said manifold further includes a fluid supply line formed therein for supplying a fluid to said first and second valves.

25. (New) A stacked valve system as defined in Claim 24, wherein said first valve includes a fluid supply duct in fluid communication with said fluid supply line formed in said manifold, said fluid supply duct supplying fluid to said first and second valves.

26. (New) A stacked valve system as defined in Claim 22, wherein said by-pass duct of said first valve is disposed within said first valve and extends from a bottom surface of said first valve to a top surface of said first valve, said second valve being supported on said top surface of said first valve.

27. (New) A stacked valve system as defined in Claim 22, wherein said first valve further includes a blow-off duct in fluid communication with said first conduit of said manifold and said second valve further includes a blow-off duct in fluid communication with said by-pass duct of said first valve, said blow-off ducts of said first and second valves being sized and shaped to accommodate for the height difference between said first and second valves.

28. (New) A stacked valve system as defined in Claim 22, wherein said first and second ports are disposed on a first face of said manifold and said first valve is supported on a second face of said manifold.

29. (New) A stacked valve system as defined in Claim 28, wherein said manifold further includes a third conduit formed therein, said third conduit terminating at a third port disposed on said first face of said manifold, and wherein said stacked valve system further includes a third valve in fluid communication with said third conduit of said manifold for supplying a burst of air out of said manifold through said third port.

30. (New) A stacked valve system as defined in Claim 29, wherein said first valve includes a second by-pass duct in fluid communication with said third conduit of said manifold, and wherein said second valve includes a by-pass duct in fluid communication with said second by-pass duct of said first valve, said third valve being supported on top of said second valve and being in fluid communication with said by-pass duct of said second valve for supplying a burst of fluid out of said manifold through said third port.

31. (New) A stacked valve system as defined in Claim 29, wherein said third valve is supported on a third face of said manifold.

32. (New) A stacked valve system as defined in Claim 31, wherein said manifold further includes a fourth conduit formed therein, said fourth conduit terminating at a fourth port disposed on said first face of said manifold, and wherein said third valve includes a by-pass duct in fluid communication with said fourth conduit of said manifold, and wherein said stacked valve system further includes a fourth valve supported on top of said third valve, said fourth valve being in fluid communication with said by-pass duct of said third valve for supplying a burst of fluid out of said manifold through said fourth port.

33. (New) A stacked valve system as defined in Claim 32, wherein said first, second, third and fourth ports of said manifold are sequentially aligned, the space between the first and the fourth blow-off ports being less than the width of said first valve plus the width of said third valve.

34. (New) A stacked valve system for providing independent bursts of fluid comprising:
a manifold having a first blow-off port and a second blow-off port formed therein and
a top surface and a bottom surface;
a first valve supported on said top surface of said manifold, said first valve being in
fluid communication with said first blow-off port of said manifold for supplying a burst of
fluid out of said first blow-off port;
a second valve supported on top of said first valve, said second valve being in fluid
communication with said second blow-off port of said manifold for supplying a burst of fluid
out of said second blow-off port.
35. (New) A stacked valve system as defined in Claim 34, further comprising a by-pass
duct for providing fluid communication between said second valve and said second blow-off
port of said manifold.
36. (New) A stacked valve system as defined in Claim 34, wherein the space between
said first and second blow-off ports of said manifold is less than the width of said first valve.